Remarks/Arguments

Applicants thank Examiner Parekh for his careful examination of this application and for the clear explanation of the claim objection and rejections; and for conditionally allowing claims 4 and 6.

Regarding claim 2, it stands objected because the Office action alleges that as described in the specification, the cover 409 is not in contact with the device 301. Applicants agree that, as depicted in Fig. 4a-5, there is indeed a gap between the cover 409 and the device 301. But the drawing figures only depict an exemplary embodiment and are not intended to be limiting. And support for the embodiment in claim 2 can be found, for example, in page 8 of the original specification where the cover tape secures the device in the pocket:

> The interlocked tape and device feature 305, 407 secure the device from rotational or horizontal movement, and the correctly sized pocket 408, pedestal 404, and cover tape 409 secure the device vertically.... [1]

In this embodiment, the device is securely disposed vertically in the tape carrier, between the pedestal and the cover tape. Therefore, the cover contacts the top surface of the semiconductor device. In order to illustrate the invention more clearly, applicants amend the drawing figures by adding Fig. 4c. In this drawing, the securing function of the cover tape is more clearly depicted. No new matter is added.

Regarding the 103 rejections against the independent claims 1, 13, 14 and the dependent claims 2, 3, 5, and 6 applicants respectfully submit that the rejection are improper because the combination of the cited references do not disclose all elements of limitation in these claims and therefore it does not support a case of prima facie obviousness. Detail explanation follows:

Claim 1 stands rejected under 35 USC 103(a) as being unpatentable over the Skrtic (US 5,398,988) in view of Chun (US 6,525,405). Applicants respectfully submit that the 103 rejection is improper because the references do not disclose all the limitations in claim 1:

Claim 1 describes packaged semiconductor device that has a semiconductor device with an indentation in the bottom surface that interlocks a protruding feature in the pocket of a

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[1] This application, p. 8, l. 21 – p. 9, l. 1.

Amendment to the Drawings:

The attached sheet of drawings includes a new Fig. 4c. This sheet replaces the original sheet that includes Fig. 1 and Fig. 2a. The new drawing Fig. 4c depicts more clearly the embodiment described in the original claim 2 and in the original specification page 8, line 21-page 9, line 2. No new matter is added.

Attachment: Replacement Sheet

carrier tape. The Skrtic patent does not disclose such a limitation; and the Chun patent does not cure this deficiency.

The Skrtic patent discloses a carrier tape of pockets that have ribs for retaining the projecting leads of the electronic components positioned therein.[2] But, as noted in the Office action, Skrtic fails to teach an indentation in the bottom surface of the device such that the protruding feature of the embossed carrier tape is interlocked in the bottom surface of the device.[3] The Skrtic patent not only fails to disclose an indentation in the bottom surface of the device, but it also fails to disclose the interlocking between the device and the tape. As clearly explained in the Skrtic patent, the aperture formed in the bottom wall of the pocket is only to "receive" a mechanical post that projects from the bottom face of the component – the aperture and the mechanical post do not interlock:

> The carrier tape of the present invention could also include apertures formed in the bottom wall of each pocket, which apertures are adapted to receive mechanical posts 113 that project from the bottom face of the component, as illustrated in FIG. 3.[4]

As explained in the Skrtic patent, the object of the invention is "to facilitate the storage and delivery of different sized components within the pockets of a single carrier tape."[5] Since there is no industry standard for the "mechanical post" that projects from the bottom face of electronic components, the aperture must be sized to "receive" the post that has the largest diameter and consequently, the Skrtic patent can not be said to disclose the interlocking feature as required in claim 1. And this deficiency is not cured by the secondary reference by the Chun patent:

First, the Chun patent does disclose a packaged semiconductor product but it does not disclose a semiconductor product of which a bottom surface has an indentation, as asserted in the Office action. Figure 2 of the Chun patent depicts a windowed leadless semiconductor packaging apparatus. The detailed description of figure 2 is copied below:

> FIG. 2 illustrates, in cross-section, another embodiment of the present invention, a windowed leadless semiconductor packaging apparatus 2000 having a leadless semiconductor device comprising a unique stamped and bent lead-frame 30 formed by

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[2] See US 5,396,988, Abstract.

[3] Office action, p. 3, last paragraph, March, 3, 2005.

[4] US 5,396,988, col. 5, ll. 45-49.

[5] See Id., Abstract.

> stamping and bending a conductive material such as copper, effecting a bend 34, a die 40 adhered to a die attach pad 41 by a non-electrically conductive adhesive material 42, and a wire 50 formed from a material such as gold, being packaged by a sight lid 80, formed from a visually transparent material such as a glass or a high temperature polymer, uniquely sealed against a cured polymeric material body 13 by a sealant material 14 such as a UV-curable epoxy resin, in accordance with the present invention. Sealant material 14 is compressed by the sight lid 80 into an outboard channel 15 of a unique dual channel sealant seat such that a portion of the sealant material 14 flows into an inboard channel 16 for providing a uniquely larger sealing surface area and better sealing against contaminant entry. The present invention, however, is not limited to the use of dual channels, but may utilize at least one channel as required by the given semiconductor circuit to be packaged. The cured polymeric material body 13 has an overlapping tapered mold line located at both the exterior portion 31 and the interior portion 32 of the stamped lead-frame 30 and a flush mold line located between the die attach pad 41 and the interior portion 33 of stamped lead-frame 30. A reinforced fill material 15 is cured unto a lower surface of the interior portion 33 of the stamped lead-frame 30, such interior portion 33 formerly being uniquely compressively retained by the mold 11 (not shown).[6] (emphasis added)

There is no mention of an indentation at the bottom of the device 2000. In fact, there is no mention in the entire Chun patent.

Second, even if we assume that there is some indentation at the bottom of Chun's device, a prima facie case is still not supportable because there is no incentive to combine the elements in the references. The two reasons cited in the Office action – improved alignment and simplified process are simply untenable:

First, as explained in a previous section, the object of the Skrtic invention is to facilitate the storage and delivery of different sized components within the pockets of a single carrier tape. The protrusion in Skrtic's carrier tape has to be smaller than the smallest possible indentation of all devices intended to be stored in the carrier. This defeats the reason that this feature can help alignment. Besides, the alignment is not an issue with the Skrtic patent because the Skrtic carrier has a two part rib design that functions as an alignment tool:

> Each such rib includes an inclined portion 120a that is inclined toward the center of the pocket, and a vertical portion 120b that adjoins the bottom wall of the pocket. The inclined portion 120a guides the component into the pocket, and the vertical portion 120b positively positions the component within the pocket, as shown in FIGS. 7 and 9.[7]

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[6] US 6,525,405, col. 7, ll. 3-32.
[7] US 5,396,988, col. 4, ll. 62-68.

Second, there is no evidence in either reference to suggest a need to simplify any particular process and there is no evidence in either reference to support the notion that a combination of the protrusion in Skrtic and the indentation in Chun can simplify the process.

In summary, the Office action fails to support a case of prima facie obviousness against claim 1, therefore claim 1 stands patentable over the combination of the Skrtic patent and the Chun patent. Because claims 2, 3, and 5 depend from claim 1, they stand patentable for the same reason.

Claims 13 and 14 require a carrier tape having a protruding feature in its pockets to interlock with a semiconductor device that has a corresponding recessed feature in a bottom surface. There is no evidence in either Skrtic patent or the Chun patent alone or in combination that teaches a protruding feature in the pockets of a carrier tape that corresponds to a recessed feature in the bottom surface of a semiconductor device and further that the two features interlock as explained in detail above. Therefore claims 13 and 14 are not rendered obvious by the Skrtic patent or the Chun patent.

In conclusion, applicants respectfully submit that this application is in allowable form; the pending claims 1-6, 13, and 14 stand patentable because the cited reference fail to support a case of prima facie obviousness. Applicants respectfully request further examination of this application and timely allowance of the pending claims.

Respectfully submitted,

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